

# **APPENDIX B**

# DC:0-5™

**Diagnostic Classification  
of Mental Health and  
Developmental Disorders of  
Infancy and Early Childhood  
VERSION 2.0**

**ZERO TO THREE**

# DC:0-5™

## **Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood**

VERSION 2.0

ZERO TO THREE



Washington, DC



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## 20 SENSORY PROCESSING DISORDERS

Sensory processing disorders are diagnosed when the infant/young child demonstrates behaviors that are believed to reflect abnormalities in regulating sensory input. The behaviors cause distress or impair the infant's/young child's functioning in daily activities. Sensory processing disorders affect individuals throughout infancy and early childhood, and there is evidence that these problems are stable in the first years of life.

There is now considerable empirical evidence that some infants/young children experience clinically significant and impairing responses to sensory stimuli that are independent of other psychopathological and neurodevelopmental conditions. These responses may be characterized by over-responsivity (e.g., heightened magnitude of response, faster latency of response, and slower habituation or recovery from response to sensory stimuli), under-responsivity (e.g., reduced magnitude of response, or slower latency to respond to sensory stimuli), or atypical responses to stimuli that may be characterized by extended sensory exploration of stimuli that is typically not noticed (e.g., licking walls or doorknobs). The sensory abnormalities must occur in more than one context (e.g., home, child care, community settings) and may involve one or more sensory domains (e.g., tactile, visual, auditory, vestibular, olfactory, taste, the sense of position of joints or pressure on muscles [proprioceptive sensation], and the sensations from internal organs [interoception]). Failure to process or respond to sensory information in an age-typical manner is associated with impairments for the infant/young child and his or her family.

The symptoms are not better accounted for by another mental disorder (e.g., Attention Deficit Hyperactivity Disorder, Generalized Anxiety Disorder, Autism Spectrum Disorder, or Posttraumatic Stress Disorder) but may co-occur with other mental disorders (with the exception of Autism Spectrum Disorder because atypical sensory responsivity is now a repetitive and restricted behavior criterion).

In contrast to regulatory disorders that were defined in the DC:0–3 and DC:0–3R, the focus on sensory processing disorders is exclusively on over- and under-responsiveness, with an “Other” category for less typical presentations. Difficulties in motor coordination are defined elsewhere and are not included in the criteria.

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### 20.1 Sensory Over-Responsivity Disorder

#### Introduction

The central feature of Sensory Over-Responsivity Disorder is a persistent pattern of exaggerated, intense, or prolonged responses to sensory stimuli that are more severe, frequent, or enduring than are typically observed in individuals of similar age and developmental level. The sensory over-responsivity occurs in more than one context (e.g., home, child care/preschool, community settings)



and can involve one or more sensory domains (e.g., tactile, sound, vision, taste, olfactory, movement through space [vestibular sensation], sense of position of joints or pressure on muscles [proprioceptive sensation], and the sensations from internal organs [interoception]). Although individual differences in sensory sensitivity exist, it is defined as a disorder when there is evidence that the sensory over-responsivity causes significant distress or results in impairment for the infant/young child or his or her family. The sensory over-responsivity symptoms observed are not better accounted for by another mental disorder (e.g., Attention Deficit Hyperactivity Disorder, Generalized Anxiety Disorder, Autism Spectrum Disorder [ASD], or Posttraumatic Stress Disorder [PTSD]) but may co-occur with other mental disorders.

### **Diagnostic Algorithm**

All of the following criteria must be met.

A. The infant/young child displays a persistent and pervasive pattern of sensory over-responsivity that involves intense, negative reactions to one or more types of routine sensory stimuli (including tactile, visual, auditory, vestibular, olfactory, taste, proprioceptive, or interoceptive) in more than one context (e.g., home, child care, playground) and with different caregivers (if the infant/young child has more than one caregiver). The intensity of reactivity or the duration of reactivity is disproportionate to the intensity of the stimulus. Either criterion 1 or 2 below must be present:

1. The infant/young child shows intense emotional or behavioral responses when exposed to stimuli that evoke the sensation. The intensity and duration of the response are disproportionate to the intensity of the stimulus.
2. The infant/young child predictably tries to avoid contact with routine sensory stimuli that are aversive to him or her.

B. The infant/young child does not meet criteria for ASD. Symptoms are not better explained by Attention Deficit Hyperactivity Disorder.

C. Symptoms of the disorder, or caregiver accommodations in response to the symptoms, significantly affect the infant's/young child's and family's functioning in one or more of the following ways:

1. Cause distress to the infant/young child;
2. Interfere with the infant's/young child's relationships;
3. Limit the infant's/young child's participation in developmentally expected activities or routines;
4. Limit the family's participation in everyday activities or routines; or
5. Limit the infant's/young child's ability to learn and develop new skills or interfere with developmental progress.

**Age:** The infant/young child must be at least 6 months old.

**Duration:** The pattern of sensory over-responsivity is present for at least 3 months.

*Specify:*

Tactile: \_\_\_\_\_ people  
 \_\_\_\_\_ objects

Auditory: \_\_\_\_\_ a specific kind of noise or decibel level of all noise (e.g., a specific stimulus of everyday life, such as a blender, toilet, or vacuum)

Olfactory: \_\_\_\_\_

Vestibular: \_\_\_\_\_ movement in space

Taste: \_\_\_\_\_ (e.g., spicy foods, bland foods, smooth foods, chewy foods—distinguish from tactile)

Visual: \_\_\_\_\_ (e.g., bright lights, moving color)

Proprioceptive: \_\_\_\_\_ cannot judge force appropriately  
(e.g., pushes too hard without malice, erases through paper)

Interoceptive: \_\_\_\_\_ sensations from internal organs  
(e.g., frequent stomach aches)

## Diagnostic Features

The central criterion of Sensory Over-Responsivity Disorder is a consistent and persistent pattern of exaggerated, intense, or prolonged responses to sensory stimuli that is more severe, frequent, or enduring than is typically observed in individuals of similar age and developmental level. The sensory over-responsivity occurs in more than one context (e.g., home, child care/preschool, community settings) and can involve one or more sensory domains (e.g., tactile, sound, vision, taste, olfactory, movement through space [vestibular sensation], the sense of position of joints or pressure on muscles [proprioceptive sensation], and the sensations from internal organs [interoception]).

### Associated Features Supporting Diagnosis

Evidence from neuroimaging studies indicates that when compared with typically developing infants/young children, infants/young children with Sensory Over-Responsivity Disorder show difficulty processing multimodal stimuli, such as a combination of auditory and visual stimuli. In addition, preliminary data suggest dysfunction of white matter in the posterior part of the brain. To date, this work has not been linked to real-world impairments, but the association of behavioral symptoms and neurobiological abnormalities does provide preliminary validity data about sensory over-responsivity. There is also evidence that sensory over-responsivity shows moderate stability through early childhood and that it is heritable, with identical twins having more similar manifestations of sensory over-responsivity than fraternal twins.

## **Developmental Features**

Infants/young children may show sensory over-responsivity symptoms—for example, crying excessively and having difficulty being soothed after exposure to loud noises or showing a consistent pattern of distress in response to being soothed by tactile, gentle movement (e.g., rocking) or other sensory experiences. As infants/young children get older, they may develop patterns of avoidance or opposition when asked to engage in activities that involve exposure to sensations to which they have adverse responses.

## **Prevalence**

The prevalence of Sensory Over-Responsivity Disorder is unknown, but epidemiological data based on parent report of symptoms suggest prevalence between 5% and 16.5% associated with family impairment.

## **Course**

The course of Sensory Over-Responsivity Disorder is unknown. However, there is moderate stability in Sensory Over-Responsivity Disorder symptoms between 1 and 8 years old, and, on average, all young children show an increase in sensory over-responsivity behaviors between 1 and 3 years old.

## **Risk and Prognostic Features**

Infants who are born preterm or small for gestational age appear to be at elevated risk for Sensory Over-Responsivity Disorder. In addition, environmental conditions—including lack of movement/tactile stimulation in the early years (e.g., due to being raised in an orphanage), exposure to drugs or prenatal stress, cumulative risk, or community violence—appear to increase risk for Sensory Over-Responsivity Disorder. Furthermore, infants/young children with Global Developmental Delays or intellectual disabilities are at increased risk for Sensory Over-Responsivity Disorder. Finally, Sensory Over-Responsivity Disorder symptoms appear to be heritable.

## **Culture-Related Diagnostic Issues**

As there is cultural variation in recognition of somatic symptoms across cultures, an infant's/young child's sensory symptoms must be evaluated in the context of the infant's/young child's family and community cultural beliefs and practices.

## **Gender-Related Diagnostic Issues**

There are no known gender differences in rates of Sensory Over-Responsivity Disorder.

## **Differential Diagnosis**

Given that atypical sensory responsivity is now a criterion for ASD, it is not possible to diagnose both ASD and Sensory Over-Responsivity Disorder. It is necessary to determine if sensory over-responsivity is not better explained by PTSD or Other Trauma, Stress, and Deprivation Disorder. In addition, it can be challenging to distinguish some anxiety responses from sensory responses (e.g., fear of vacuum cleaner). If the infant/young child is only bothered by

one loud object, it is unlikely that the source of the distress reflects a sensory abnormality. It is critical to observe a pattern of sensory over-responsivity that occurs across settings and stimuli that share a sensory component.

### **Comorbidity**

The majority of infants/young children with Sensory Over-Responsivity Disorder do not have co-occurring psychiatric diagnoses. Infants with Sensory Over-Responsivity Disorder can manifest severe feeding problems, sleep problems, and difficulties with self-soothing. In preschool, young children with Sensory Over-Responsivity Disorder are at elevated risk for emotional and behavior problems, and school-age children are more likely to have academic difficulties. There appears to be a very high risk of anxiety disorders among infants/young children with Sensory Over-Responsivity Disorder, and parents of young children with Obsessive Compulsive Disorder report extremely high rates of sensory over-responsivity.

### **Links to DSM–5 and ICD–10**

**DSM–5:** Other Specified Neurodevelopmental Disorder

**ICD–10:** Other Disorders of Psychological Development (F88)

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## **20.2 Sensory Under-Responsivity Disorder**

### **Introduction**

The central feature of Sensory Under-Responsivity Disorder is a persistent pattern of muted, minimal, neutral, or extremely brief responses to sensory stimuli that is not consistent with developmental expectations. The sensory under-responsivity occurs in more than one context (e.g., home, child care/preschool, community settings) and can involve one or more sensory domains (e.g., tactile, sound, vision, taste, olfactory, movement through space [vestibular sensation], the sense of position of joints or pressure on muscles [proprioceptive sensation], and the sensations from internal organs [interoception]). Because individual differences in sensory responsiveness exist, sensory under-responsivity behaviors are defined as a disorder when there is clear evidence that the sensory under-responsivity causes significant distress or results in impairment for the infant/young child or his or her family. The sensory under-responsivity symptoms observed are not better accounted for by another mental disorder (e.g., Attention Deficit Hyperactivity Disorder [ADHD] inattentive type, depression, Autism Spectrum Disorder [ASD]) but may co-occur with other mental disorders other than ASD.

### **Diagnostic Algorithm**

All of the following criteria must be met.

A. The infant/young child displays a persistent and pervasive pattern of sensory under-responsivity that involves muted or neutral reactions to one or more types of intense sensory stimuli (including tactile, visual, auditory, vestibular, olfactory, or taste) in more than one context (e.g., home, child care/school, playground)

and with different caregivers (if the infant/young child has more than one caregiver). The minimal intensity of reactivity or the latency to initiate a response is disproportionate to the intensity of the stimulus. Either criterion 1 or 2 below must be present:

1. The infant/young child shows muted emotional or behavioral responses when exposed to intense stimuli that are expected to evoke a strong or at least a moderate sensory response. The minimal intensity of reactivity, long latency to respond, and brief duration of the response are disproportionate to the intensity of the stimulus.
2. The infant/young child is predictably unresponsive to routine sensory stimuli that would be expected to evoke a strong positive or aversive response (even when the lack of response may be associated with injury).

B. Symptoms of the disorder, or caregiver accommodations in response to the symptoms, significantly affect the infant's/young child's and family's functioning in one or more of the following ways:

1. Cause distress to the infant/young child;
2. Interfere with the infant's/young child's relationships;
3. Limit the infant's/young child's participation in developmentally expected activities or routines;
4. Limit the family's participation in everyday activities or routines; or
5. Limit the infant's/young child's ability to learn and develop new skills or interfere with developmental progress.

**Age:** The infant/young child must be at least 6 months old.

**Duration:** The pattern of sensory under-responsivity is present for at least 3 months.

*Specify:*

Tactile: \_\_\_\_\_ people  
 \_\_\_\_\_ objects

Auditory: \_\_\_\_\_ a specific kind of noise or decibel level of all noise

Olfactory: \_\_\_\_\_

Vestibular: \_\_\_\_\_ movement in space

Taste: \_\_\_\_\_ (distinguish from tactile)

Visual: \_\_\_\_\_ (e.g., bright lights, moving colors)

Proprioceptive: \_\_\_\_\_ (sense of body based on input from muscles)

Interoceptive: \_\_\_\_\_ (sensations from internal organs)

## **Diagnostic Features**

The central criterion of Sensory Under-Responsivity Disorder is a consistent and persistent pattern of muted, minimal, or extremely brief responses to sensory stimuli that is much less intense, frequent, or enduring than is typically observed in individuals of similar age and developmental level. The sensory under-responsivity occurs in more than one context (e.g., home, child care/preschool, community settings) and can involve one or more sensory domains (e.g., tactile, sound, vision, taste, olfactory, movement through space [vestibular sensation], the sense of position of joints or pressure on muscles [proprioceptive sensation], and the sensations from internal organs [interoception]). For example, the infant/young child may be unaware of pain even when bloodied by a fall or may not notice a television being turned on at a very loud volume.

## **Associated Features Supporting Diagnosis**

There are no known associated features for Sensory Under-Responsivity Disorder.

## **Developmental Features**

There are no known developmental differences during early childhood in young children with Sensory Under-Responsivity Disorder, but the young child's ability to understand and to communicate about reduced responsiveness increases through the preschool years.

## **Prevalence**

The prevalence of Sensory Under-Responsivity Disorder is unknown, but it is believed to be rare.

## **Course**

The course of Sensory Under-Responsivity Disorder is unknown.

## **Risk and Prognostic Features**

There is not clear evidence regarding risk and prognostic features for Sensory Under-Responsivity Disorder.

## **Culture-Related Diagnostic Issues**

As there are cultural variations in recognition of somatic symptoms across cultures, an infant's/young child's sensory symptoms must be evaluated in the context of his or her family's and community's cultural beliefs and practices.

## **Gender-Related Diagnostic Issues**

There are no known gender differences in rates of Sensory Under-Responsivity Disorder.

## **Differential Diagnosis**

Given that atypical sensory responsivity is a criterion for ASD, the presence of ASD precludes a diagnosis of Sensory Under-Responsivity Disorder. In

addition, it can be challenging to distinguish the inattentive type of ADHD from Sensory Under-Responsivity (e.g., failing to respond when a television is turned up very loud). If other symptoms of ADHD can explain the symptoms of under-responsivity, a diagnosis of ADHD should be assigned. Sensory Under-Responsivity Disorder requires clear evidence of limited responsivity to sensory inputs specifically. These infants/young children should also be evaluated for medical conditions in which infants/young children are insensitive to pain.

### **Comorbidity**

There are no data on comorbidities for infants/young children with Sensory Under-Responsivity Disorder.

### **Links to DSM–5 and ICD–10**

**DSM–5:** Other Specified Neurodevelopmental Disorder

**ICD–10:** Other Disorders of Psychological Development (F88)

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## **20.3 Other Sensory Processing Disorder**

### **Diagnostic Algorithm**

All of the following criteria must be met.

A. The infant/young child displays a persistent and pervasive pattern of atypical sensory responding that does not meet criteria for Sensory Over-Responsivity Disorder or Sensory Under-Responsivity Disorder.

B. The infant's/young child's symptoms are specifically related to sensory stimulation, and the infant/young child does not meet criteria for Autism Spectrum Disorder; furthermore, the symptoms are not better explained by Attention Deficit Hyperactivity Disorder.

C. Symptoms of the disorder, or caregiver accommodations in response to the symptoms, significantly affect the infant's/young child's and family's functioning in one or more of the following ways:

1. Cause distress to the infant/young child;
2. Interfere with the infant's/young child's relationships;
3. Limit the infant's/young child's participation in developmentally expected activities or routines;
4. Limit the family's participation in everyday activities or routines; or
5. Limit the infant's/young child's ability to learn and develop new skills or interfere with developmental progress.

**Age:** The infant/young child must be at least 6 months old.

**Duration:** The pattern of sensory over-responsivity or under-responsivity is present for at least 3 months.

*Specify:*

Tactile: \_\_\_\_\_ people

\_\_\_\_\_ objects

Auditory: \_\_\_\_\_ a specific kind of noise or decibel level of all noise

Olfactory: \_\_\_\_\_

Vestibular: \_\_\_\_\_ movement in space

Taste: \_\_\_\_\_ (distinguish from tactile)

Visual: \_\_\_\_\_ (e.g., bright lights, moving colors)

Proprioceptive: \_\_\_\_\_ (sense of body based on input from muscles)

Interoceptive: \_\_\_\_\_ (sensations from internal organs)

## Links to DSM–5 and ICD–10

**DSM-5: Other Specified Neurodevelopmental Disorder**

## ICD-10: Other Disorders of Psychological Development (F88)